US005769707A

United States Patent [19]

Jang et al.

[11] **Patent Number: 5,769,707**

[45] **Date of Patent: Jun. 23, 1998**

[54] **METHOD AND APPARATUS FOR BROADENING AN AIR DISCHARGE PATTERN FROM A ROOM AIR CONDITIONER**

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[21] Appl. No.: **764,108**

[22] Filed: **Dec. 6, 1996**

[30] **Foreign Application Priority Data**

Dec. 12, 1995 [KR] Rep. of Korea 1995-48876
Apr. 13, 1996 [KR] Rep. of Korea 1996-11136
Apr. 13, 1996 [KR] Rep. of Korea 1996-11137

[51] **Int. Cl.**[6] **F24F 13/06**
[52] **U.S. Cl.** **454/233**; 454/285
[58] **Field of Search** 454/229, 230, 454/231, 233, 234, 256, 285, 286, 306, 316

[56] **References Cited**

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Primary Examiner—Harold Joyce
Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis, L.L.P.

[57] **ABSTRACT**

A room air conditioner includes a housing forming an air inlet and an air outlet, a blower for circulating air through the housing, and a heat exchanger for changing the air temperature as the air flows through the housing. An upper portion of the housing which possesses the air outlet is oscillatable about a vertical axis relative to a lower portion of the housing which possesses the air inlet. A drive mechanism oscillates the upper portion in response to the manual inputting of an oscillation signal to a controller. When the air conditioner is shut off, the upper portion is rotated by 180 degrees to expose a more attractive side of the upper portion to viewers in the room.

11 Claims, 8 Drawing Sheets

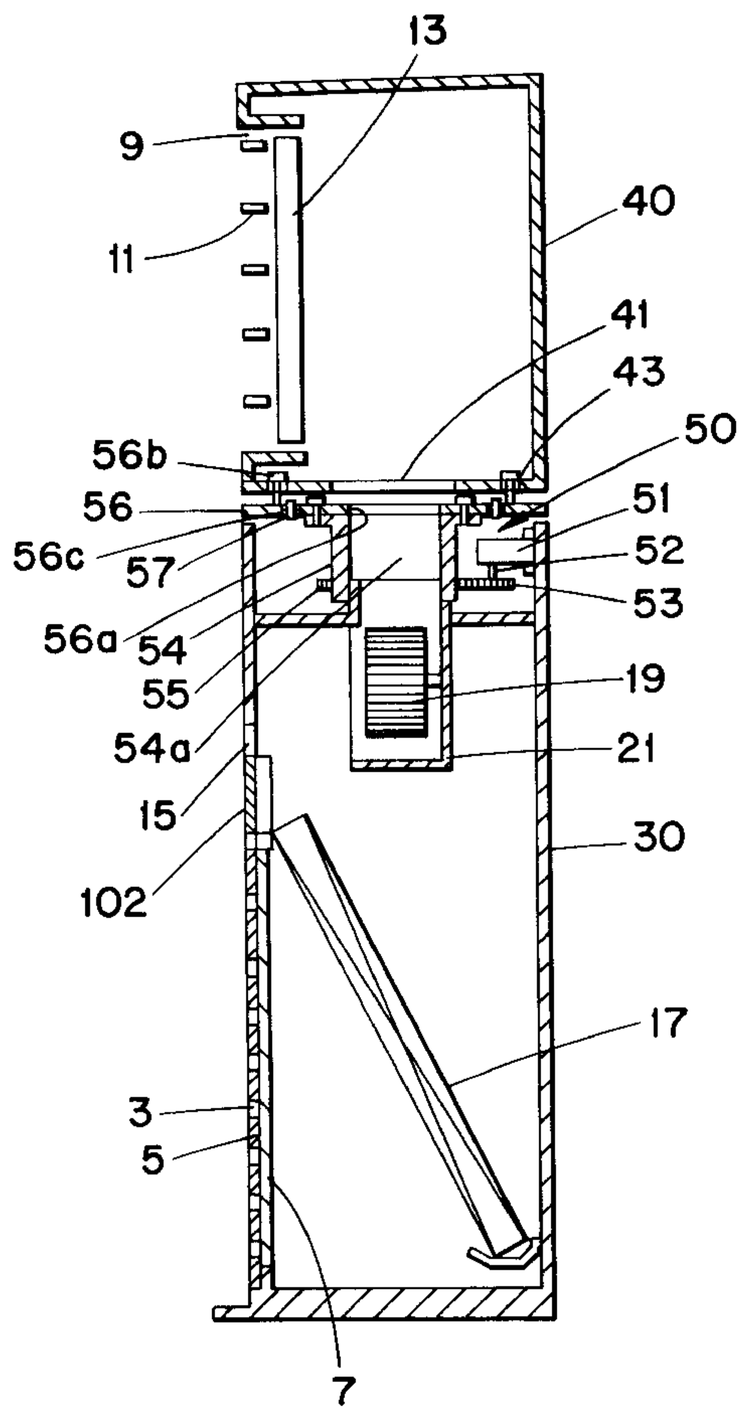


FIG. 1
(PRIOR ART)

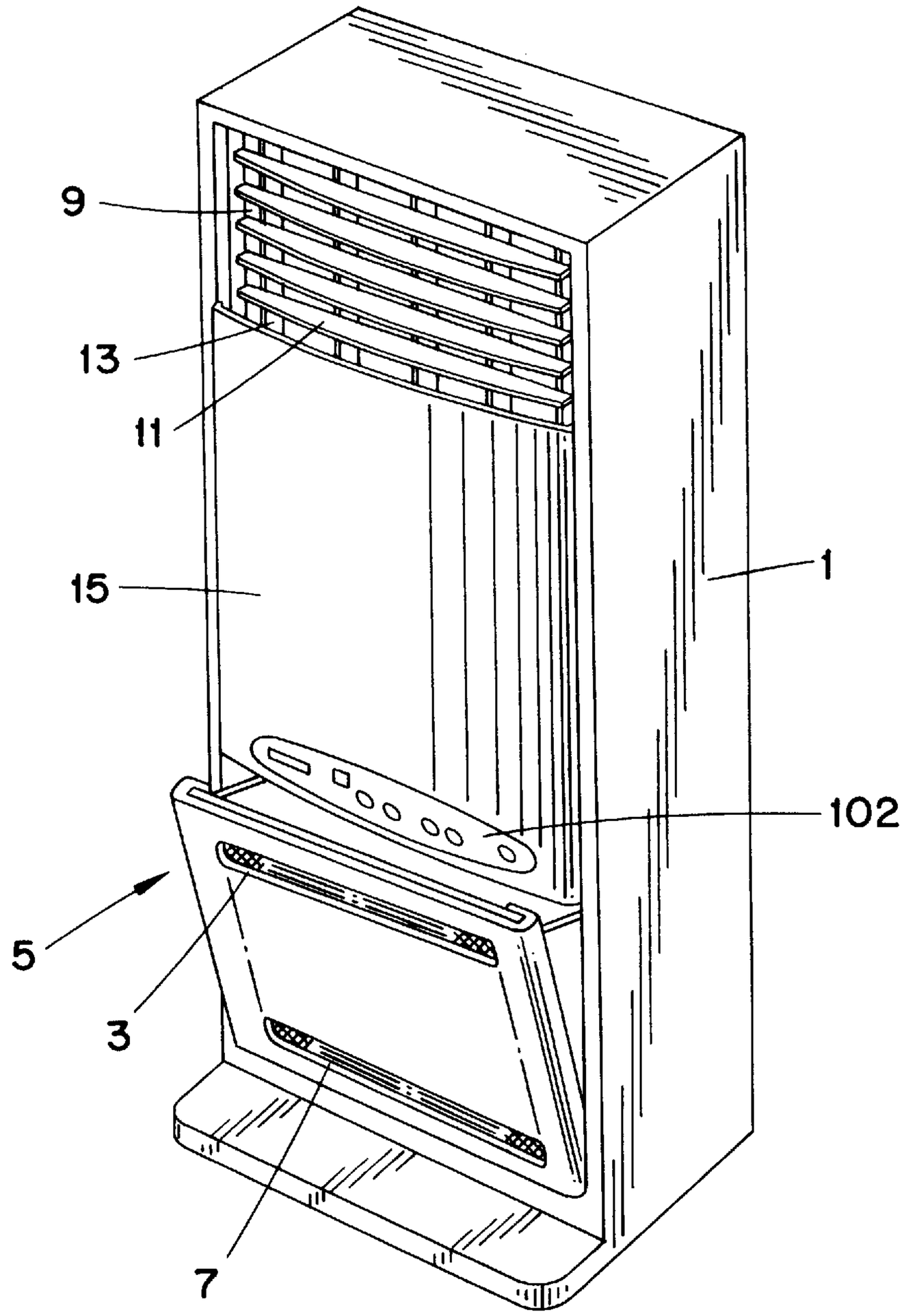


FIG. 2
(PRIOR ART)

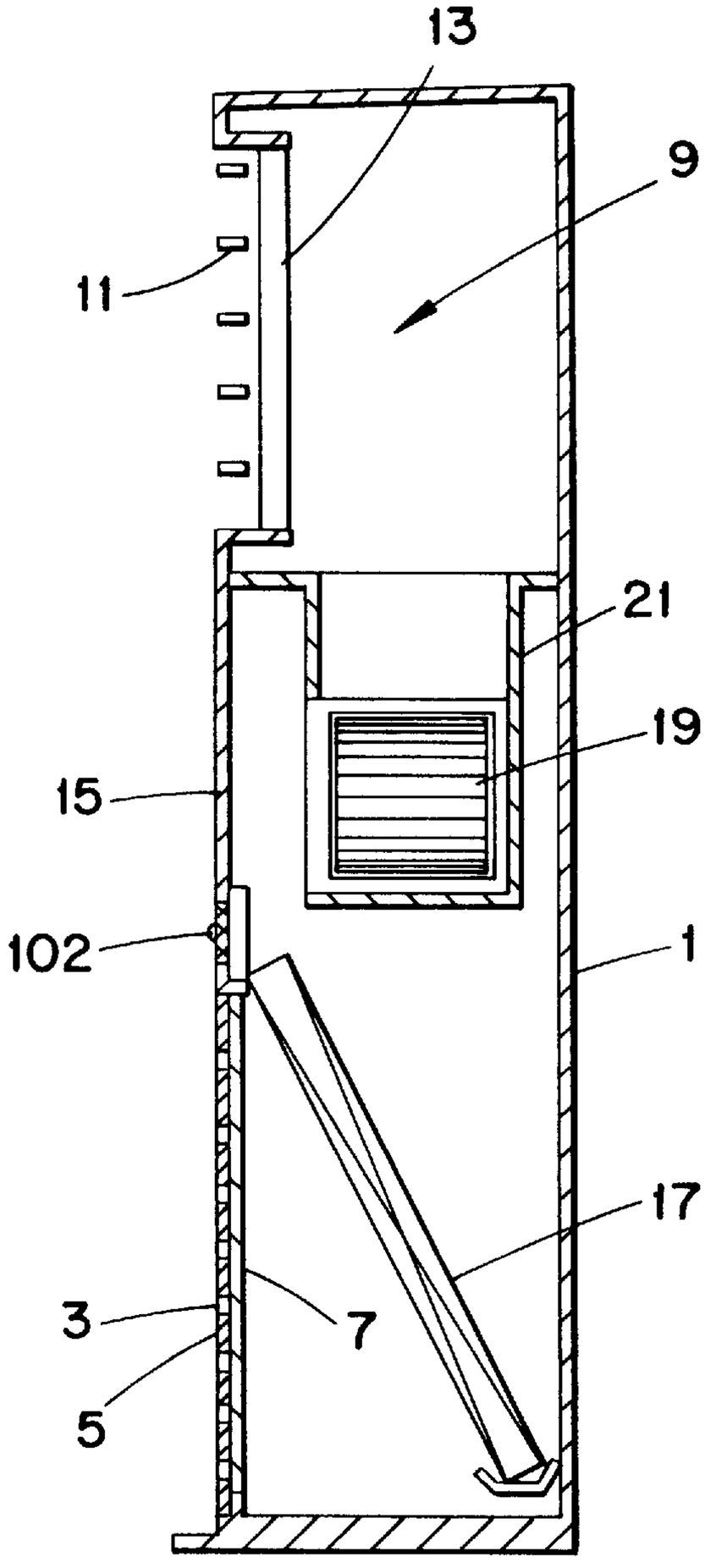


FIG. 3

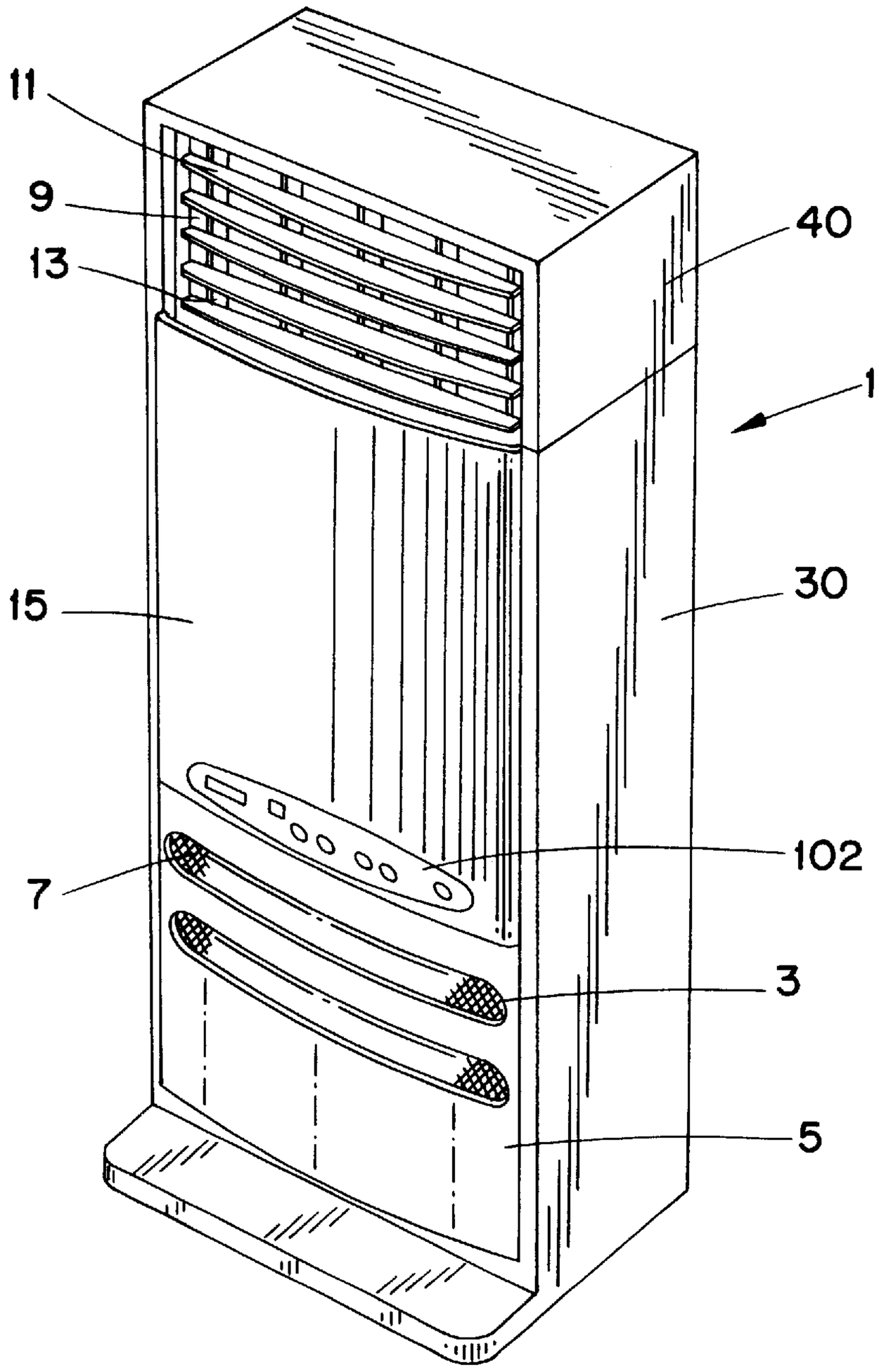


FIG. 4

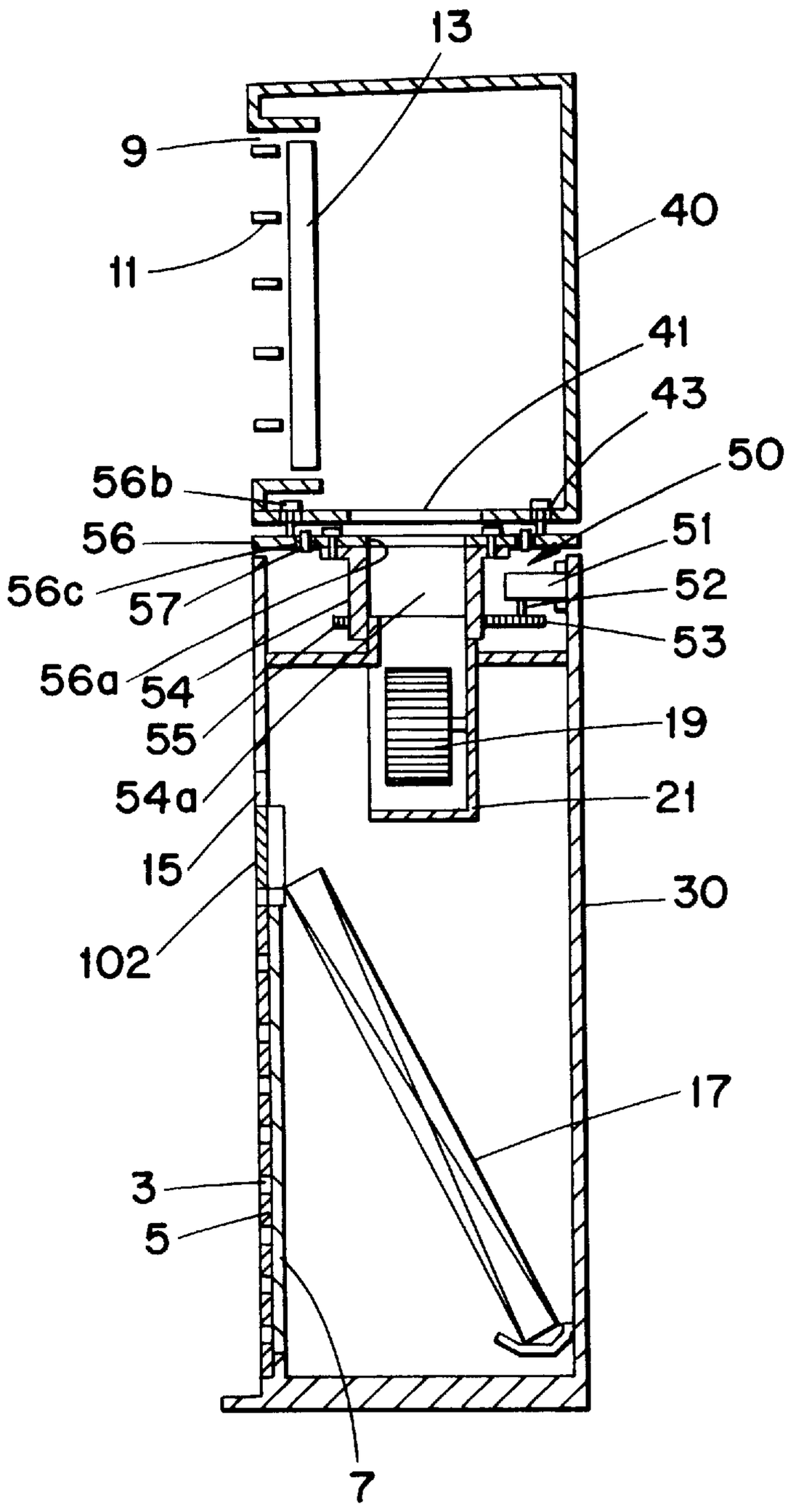

13
9
40
11
41
43
50
56b
51
56
52
56c
57
53
56a
54
55
19
54a
21
15
30
102
17
3
5
7

FIG. 5

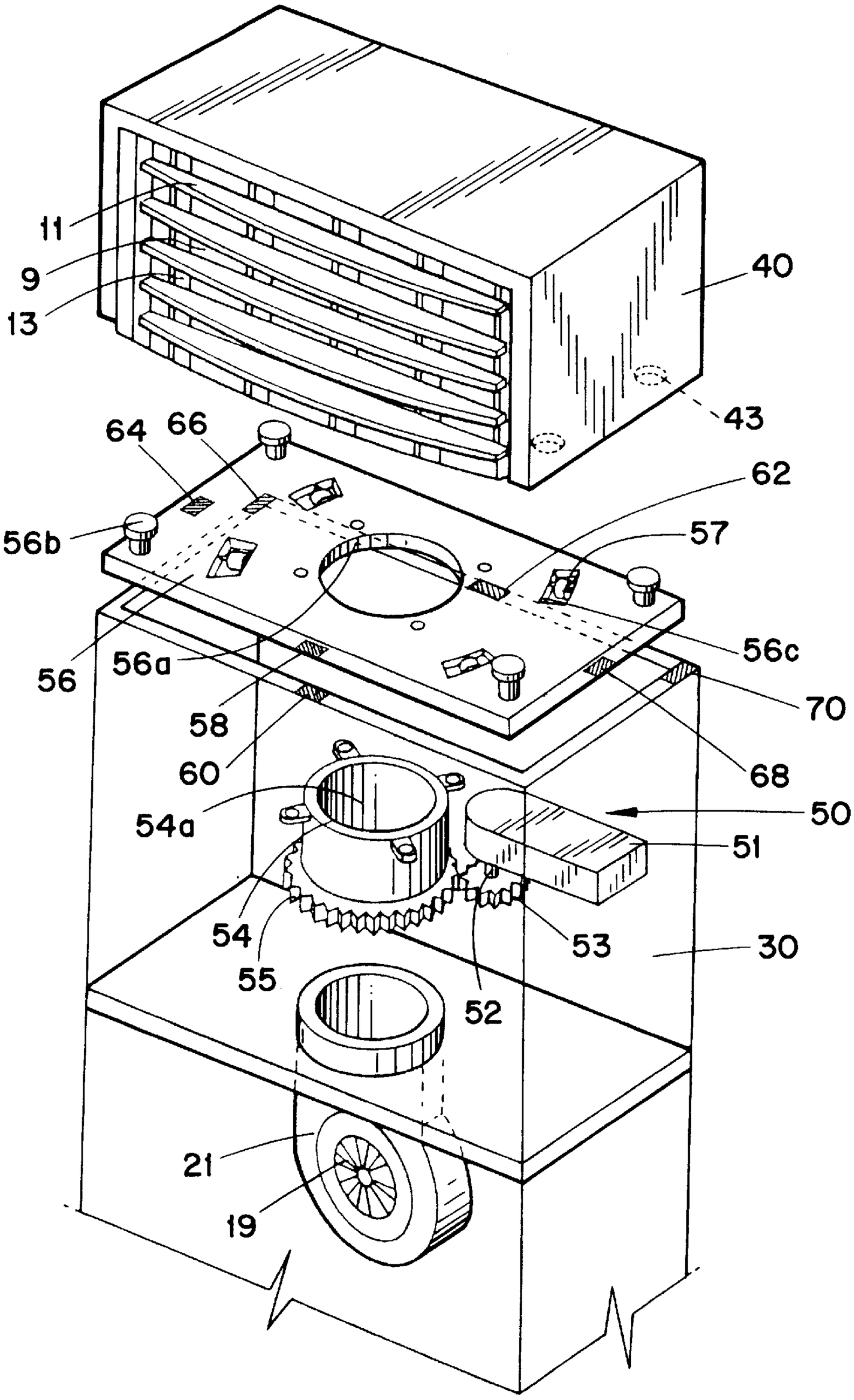

11
9
13
40
43
64
66
62
56b
57
56c
56
56a
58
70
60
68
54a
50
51
54
53
30
55
52
21
19

FIG. 6

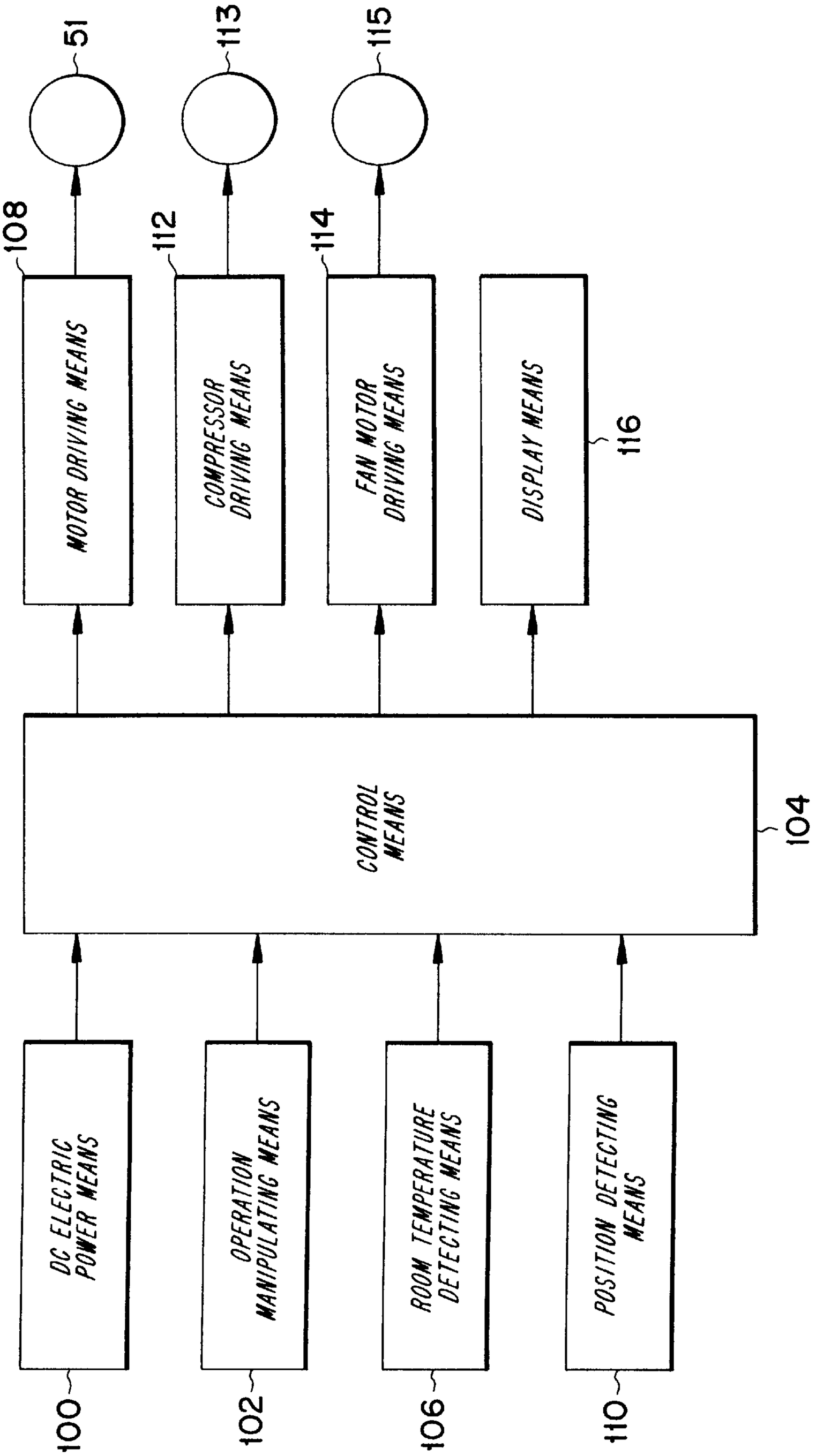
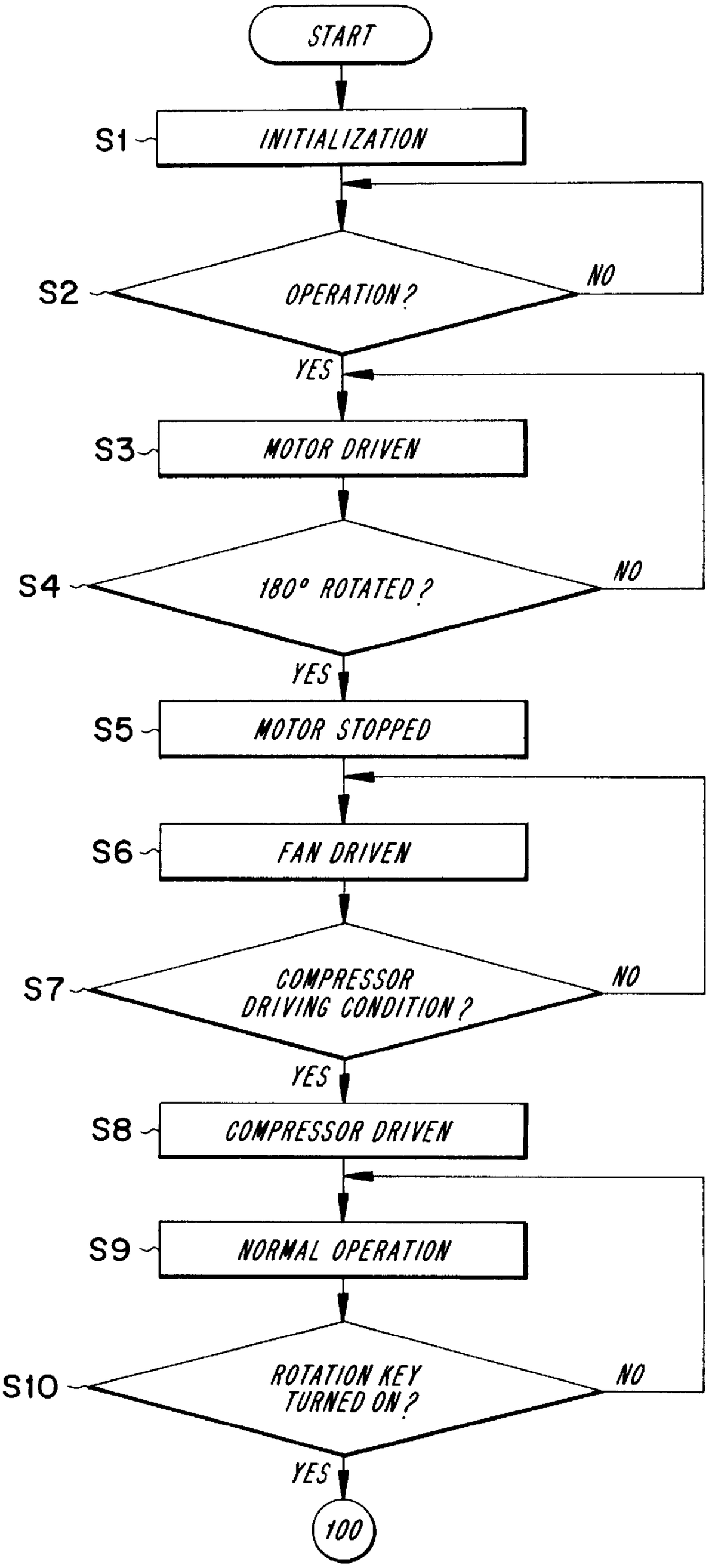

CONTROL MEANS
104
DC ELECTRIC POWER MEANS
100
OPERATION MANIPULATING MEANS
102
ROOM TEMPERATURE DETECTING MEANS
106
POSITION DETECTING MEANS
110
MOTOR DRIVING MEANS
108
COMPRESSOR DRIVING MEANS
112
FAN MOTOR DRIVING MEANS
114
DISPLAY MEANS
116
51
113
115

FIG. 7A


START
S1
INITIALIZATION
S2
OPERATION?
NO
YES
S3
MOTOR DRIVEN
S4
180° ROTATED?
NO
YES
S5
MOTOR STOPPED
S6
FAN DRIVEN
S7
COMPRESSOR DRIVING CONDITION?
NO
YES
S8
COMPRESSOR DRIVEN
S9
NORMAL OPERATION
S10
ROTATION KEY TURNED ON?
NO
YES
100

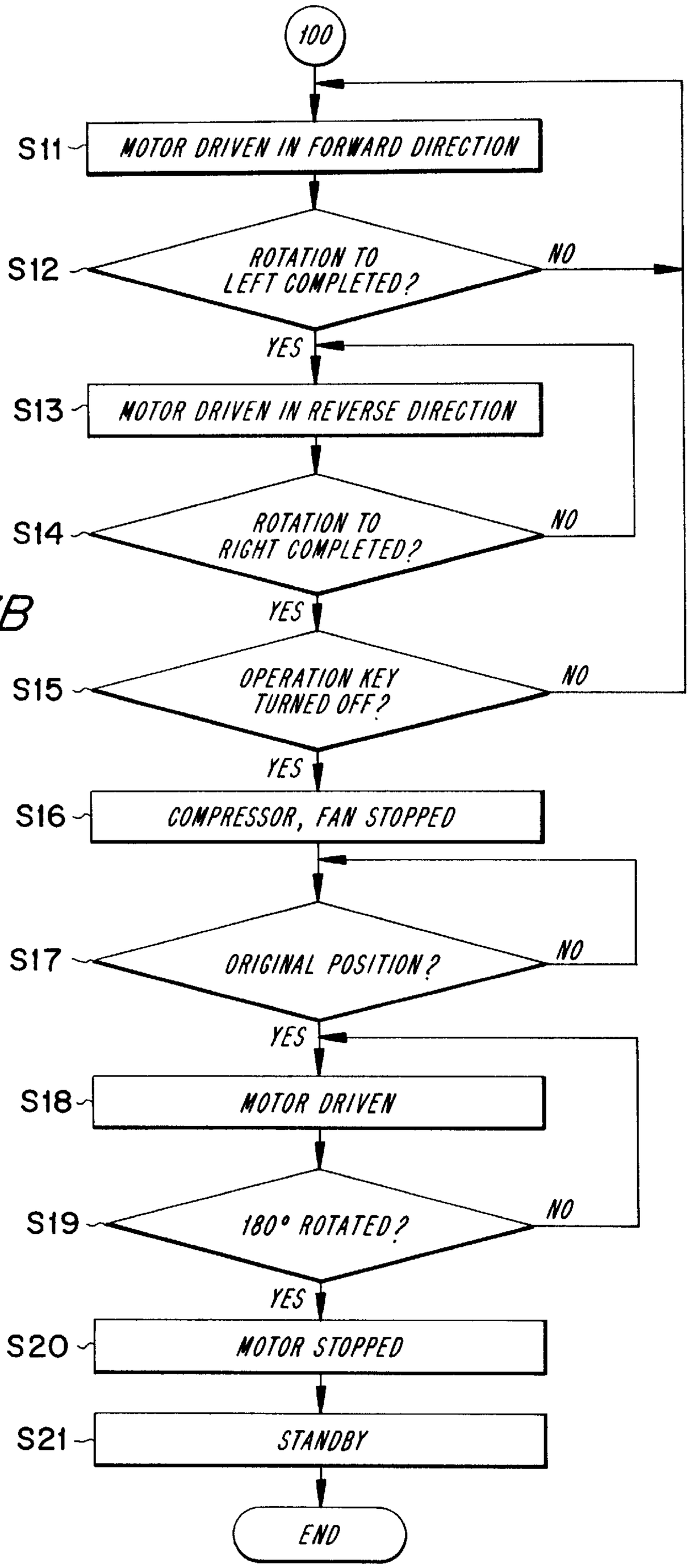

100
S11
MOTOR DRIVEN IN FORWARD DIRECTION
S12
ROTATION TO LEFT COMPLETED?
NO
YES
S13
MOTOR DRIVEN IN REVERSE DIRECTION
S14
ROTATION TO RIGHT COMPLETED?
NO
YES
S15
OPERATION KEY TURNED OFF?
NO
YES
S16
COMPRESSOR, FAN STOPPED
S17
ORIGINAL POSITION?
NO
YES
S18
MOTOR DRIVEN
S19
180° ROTATED?
NO
YES
S20
MOTOR STOPPED
S21
STANDBY
END

FIG. 7B

METHOD AND APPARATUS FOR BROADENING AN AIR DISCHARGE PATTERN FROM A ROOM AIR CONDITIONER

FIELD OF THE INVENTION

The present invention relates to a discharging apparatus of an air conditioner and control method thereof for broadening the range of discharging air, and enhancing the exterior appearance of an air conditioner.

DESCRIPTION OF THE PRIOR ART

FIG. **1** shows a conventional air conditioner.

An indoor unit body **1** (hereinafter referred to as indoor unit) is arranged at the bottom of a front side thereof with a suction grill member **5** consisting of multiple suction inlets **3** for sucking the room air and a filter member **7**, for preventions dust, foreign objects and the like from being infused into the indoor unit through a suction inlet **3**.

Meanwhile, a discharge outlet **9** is provided with a wind direction up and down control member **11** and a wind direction left and right control member **13**.

The indoor unit body **1** is coupled to a front cover member **15** forming an enclosure thereof. Furthermore, as illustrated in FIG. **2**, the filter member **7** is arranged in front of a heat exchanger **17** so as to heat-exchange the room air sucked through the filter member **7** to form cool air or warm air by way of latent heat of a refrigerant.

The heat exchanger **17** is arranged at the upper part with an indoor fan **19** for sucking the room air through the suction inlet **3** and simultaneously for discharging the air heat-exchanged by the heat exchanger **17** through the discharge outlet **9**.

Furthermore, the indoor fan **19** disposed in a duct member **21** configured to cover the indoor fan **19** and to suck the room air through the suction inlet **3** and to guide the flow of air discharged through the discharge outlet **9**.

In the thus-constructed air conditioner, the user manipulates a manipulating means **102** or remote controller to select a desired room temperature.

The indoor fan **19** is then driven and simultaneously room air is sucked into the indoor unit body **1** through the suction inlet **3**.

Foreign objects like dust being infused through the suction inlet **3** are removed by the filter member **7**, and the room air is heat-exchanged by way of latent heat of a refrigerant. The air heat-exchange in the heat-exchanger **17** is guided upwardly by the duct member **21** and discharged into a room through the discharge outlet **9**.

At this time, the wind direction up and down control member **11** and the wind direction left and right control member **13** control the direction of the air being discharged into the room through the discharge outlet **9**.

In the thus-constructed air conditioner, the direction of the air being discharged from the indoor unit **1** is controlled only by the wind direction up and down control member **11** and the wind direction left and right control member **13** that control is limited and may not provide a pleasant air direction.

Furthermore, there is another problem in that an exterior of the indoor unit **1** is not beautiful due to the opening of discharge outlet **9** arranged in front of the indoor unit **1** when the air conditioner is not operated.

SUMMARY OF THE INVENTION

The present invention is therefore disclosed to solve the afore-mentioned problem, and it is an object of the present

invention to provide a discharging apparatus of an air conditioner and a control method thereof for broadening the air discharging range, and thereby maintaining a pleasant room temperature condition.

It is another object of the present invention to provide a discharging apparatus of an air conditioner and a method thereof in which an upper cabinet an be rotated at an angle of 180 degrees and thereby present a more pleasant appearance during non-operating periods.

In accordance with one aspect of the present invention there is provided a discharging apparatus of an air conditioner, comprising:

a lower cabinet being formed with a suction inlet for sucking room air;

an upper cabinet being formed with a discharge outlet and being rotatably provided at the upper side of the lower cabinet;

operation manipulating means for inputting a selection signal to rotate the upper cabinet;

control means for controlling the rotation operation of the upper cabinet according to the selection signal inputted by the operation manipulating means;

driving means for controlling direction of air being discharged through the discharge outlet and for rotating the upper cabinet; and

position detecting means for detecting the position of the upper cabinet being rotated according to a control signal of the driving means.

In accordance with the present invention a discharging control method of an air condidioner provides an air conditioner comprising the step of:

inputting a selection signal for rotating an upper cabinet which is formed with a discharge outlet for discharging heat-exchanged air;

rotating the upper cabinet by the operation of driving means for controlling direction of air discharged and for beautifying the exterior of an indoor unit;

detecting the rotated position of the upper cabinet by the operation of the driving means; and

controlling the power supply source to the driving means according to the rotated position of the upper cabinet.

BRIEF DESCRIPTION OF THE DRAWING

For a fuller understanding of the nature and objects of the invention, reference should be made to the following detailed description taken in conjunction with the accompanying drawings in which;

FIG. **1** is a perspective view for illustrating a conventional air conditioner.

FIG. **2** is a sectional view for illustrating the conventional air conditioner.

FIG. **3** is a perspective view for illustrating an air conditioner according to the present invention.

FIG. **4** is a longitudinal sectional view for illustrating the air conditioner according to the present invention.

FIG. **5** is an exploded perspective view for illustrating the air conditioner according to the present invention.

FIG. **6** is a control block diagram of a discharge apparatus of an air conditioner according to the present invention.

FIGS. **7**A and **7**B are flow charts respectively illustrating the method for controlling the discharging operation of the air conditioner according to the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

The embodiment of the present invention will now be described in detail with reference to the accompanying drawings.

Throughout the drawings, like reference numerals and symbols are used for designation of like or equivalent parts or portions for simplicity of illustration and detailed description thereof is omitted.

As illustrated in FIG. **3**, an indoor unit body **1** (hereinafter referred to as indoor unit) is divided into two parts namely, an upper cabinet **40** and a lower cabinet **30**. The upper cabinet **40** is rotatably arranged on the upper side of the lower cabinet **40**.

As illustrated in FIG. **4** and FIG. **5**, the lower cabinet **30** is arranged at the upper side thereof with driving means **50** for rotating the upper cabinet **40** at a predetermined angle up to 180 degrees with respect to the lower cabinet **30**.

The upper cabinet **40** is arranged at the lower side thereof with a hole **41** for sucking the heat-exchanged air into the inside thereof.

Meanwhile, the driving means **50** includes a motor **51** coupled to one side of the lower cabinet **30** so as to generate a mechanical power, a first gear **53** installed on a motor axle member **52** of the motor **51** for rotating right or left by the power of the motor **51**, and a second gear **55** geared into the first gear **53** and simultaneously coupled to the outer surface of a connection member **54** for being rotated right or left by the rotation of the first gear **53** thereby causing the connection member **54** to be rotated, and a rotation plate **56** coupled to the upper side of the connection member **54** for carrying the upper cabinet **40**.

The connection member **54** is formed at the inner side thereof with a hole **54***a* for passing air heat-exchanged by a heat-exchanger **17** disposed in a duct member **21**.

The inner diameter of the hole **54***a* for passing the heat-exchanged air is more than the outer diameter of the duct member **21** to enable the member **54** to be rotated easily without interference by the duct member **21**.

The rotating plate **56** is provided at the middle portion thereof with a passage hole **56***a* for introducing the air passing through the hole **54***a* into the upper cabinet **40**, and also is provided with a plurality of boss members **56***b* inserted into respective fixing holes of the upper cabinet **40**.

The passage hole **56***a* is provided with grooves **56***c* which are coupled roller members **57** for enabling the upper cabinet **40** to rotate easily. Meanwhile, the lower cabinet **30** is arranged on the upper front side thereof with a first position detecting sensor **60** for detecting whether or not the upper cabinet **40** and the lower cabinet **30** coincide exactly by contacting with a contact member **58** disposed on the rotation plate **56**.

The lower cabinet **30** is provided on the upper rear side thereof with a second position detecting sensor **62** for detecting whether or not the upper cabinet **40** is rotated at an angle of 180 degrees relative to the lower cabinet **30**.

Furthermore, the lower cabinet **30** is provided on the upper left side thereof with a third position detecting sensor **66** for detecting the position of the upper cabinet **40** when the latter has been rotated to the left relative to the lower cabinet **30**, and also is provided on the upper right side thereof with a fourth position detecting sensor **70** for detecting the position of the upper cabinet **40** when the latter has been rotated to the right relative to the lower cabinet **30**.

Next, the control block diagram for rotating the upper cabinet formed with the discharge outlet will be described in detail with reference to FIG. **6**.

As illustrated in FIG. **6**, a direct current DC electric power means **100** serves to receive a power source voltage of commercial alternating current electric power supplied from an AC power source input terminal to thereby transform same to a predetermined DC voltage necessary for operation of the air conditioner.

Operation manipulating means **102** has a plurality of functional keys (artificial intelligence, cooling, warming air cleaning, booked operation, stop and the like) so as to input operation conditions of the air conditioner desired by a user, and has a signal input key for inputting an operation start signal and an operation stop signal into the air conditioner and also has a rotation key for rotating the upper cabinet to enable its discharge outlet **9** to cover a wide scope.

Control means **104** is a microcomputer which serves to receive the DC voltage output from the DC electric power means **100** to initialize the air conditioner, and at the same time, to control overall operations of the air conditioner according to the operation selecting signal and operation and stop operation signals input from the operating manpulating means **102**.

The control means **104** controls the supply of electric power to the motor **51** thereby causing the upper cabinet **40** to be controlled according to the operation signal and the rotation signal.

Room temperature detecting means **106** detects an actual temperature Tr of the room air sucked through the suction inlet **3**.

Motor driving means **108** serves to receive a control signal output from the control means **104** when the operation key and the rotation key on the operating manipulating means **102** are selected to controllably drive the motor **51** so that the upper cabinet **40** formed with the discharge outlet **9** is rotated.

Position detecting means **110** serves to sense the angle to which the upper cabinet **40** is rotated with respect to the lower cabinet **30** and to output the sensed value to the control means **104**.

Furthermore, the position detecting means **110** includes the position detecting sensors **60**, **62**, **66** and **70**.

Compressor driving means **112** serves to receive a control signal from the control means **104** according to a difference between the reference temperature Ts established by the user and the room actual temperature Tr detected by the room temperature detecting means **106**, to thereby controllably drive a compressor **113**.

Fan motor driving means **114** is adapted to receive a control signal from the control means **104** to energize an indoor fan motor **115** which drives the indoor fan **19**.

Display means **116** serves to display an operation condition established by the operation manipulating means **102**, and to display reference temperature Ts, and operation conditions according to a control signal generated from the control means **104**.

Now, the operation effect of the discharging apparatus of the air conditioner thus constructed and a control method thereof will be described with reference to FIGS. **7**A and **7**B.

As an initial condition for describing the operation of the present invention, it is assumed that the discharge outlet **9** formed at the upper cabinet **40** is situated at the back side of the indoor unit **1**.

First of all, the DC electric power means **100** serves to convert commercial AC power to a predetermined DC voltage necessary for driving the air conditioner and to output same to respective driving circuits and the control means **104**.

At step S**1**, the control means **104** serves to receive the DC voltage output from the DC electric power means **100** to initialize the air conditioner.

At this time, when the user manipulates the operation manipulating means **102** to select desired manipulating command conditions (i.e., cold room, warm room, dehumidification, cleanness and the like) and the predetermined temperature Ts and the predetermined wind quantity and the predetermined wind direction, and inputs an operation key signal, the operation starting signal and the manipulating command from the operation manipulating means **102** are inputed into the control means **104**.

During this time period, at step **S2**, the control means **104** serves to discriminate whether operation key signal is inputted. If the operation key signal is not inputted (in case of NO), flow returns to the step **S2** to thereby execute repeatedly the operation subsequent to the step **S2** until the operation key signal is inputted.

As a result of the discrimination of the step **S2**, if the operation key signal is inputted (in case of YES), flow advances to the step **S3** to execute the operation of the air conditioner, where the control means **104** serves to output a control signal to the motor driving means **108** for rotating the upper cabinet **40** at an angle of 180 degrees so as to turn the discharge outlet **9** situated at first in the back side of the indoor unit **1** toward the front of the indoor unit **1**.

Therefore, the motor driving means **108** serves to drive the motor **51** according to the control signal generated from the control means **104** and to thereby rotate counterclockwise the first gear **53** coupled with the motor shaft member **52**, and to thereby rotate clockwise the connection member **54** according to reverse rotation of the second gear **55**.

Thus, the rotating plate **56** coupled with the connection member **54** is rotated and the upper cabinet **40** coupled with the rotating plate **56** is rotated at an angle of 180 degrees and thereby the discharge outlet **9** is situated at the front side of the indoor unit **1**.

If the upper cabinet **40** is rotated at an angle of 180 degrees at step **S4** the contact member **58** provided on the lower part of the rotation plate **56** is contacted by the first position sensor **60** provided on the upper side of the lower cabinet **30** to thereby detect the rotated position of the upper cabinet **40**.

The control means **104** serves to discriminate whether the upper cabinet **40** is rotated at an angle of 180 degrees perfectly according to the signal detected by the first position sensor **60**.

As a result of the discrimination at the step **S4**, if the upper cabinet **40** is not rotated at an angle of 180 degrees perfectly (in case of NO), flow returns to the step **S3** and executes repeatedly the operation of the motor **51** until the upper cabinet **40** is rotated at an angle of 180 degrees perfectly.

If the upper cabinet **40** is rotated at an angle of 180 degrees (in case of YES), flow advances to step **S5**, where the motor driving means **108** serves to stop the motor **61** and thereby the rotating operation of the upper cabinet **40** is finished.

At step **S6**, the fan motor driving means **114** serves to control the rotation speed of the indoor fan motor **115** which drives the indoor fan **19**.

If the indoor fan **19** is driven, room air is sucked into the indoor unit **1** through the suction inlet **3**. At this time, the room air temperature detecting means **106** serves to detect the temperature of room air Tr sucked through the suction inlet **3** and output the detected signal to the control means **104**.

Successively, at step **S7**, a comparison is made between the room actual temperature Tr and the reference temperature Ts established by the user, thereby discriminating whether the compressor **113** needs to be actuated.

That is, assuming at step **S7** that either: (A) for cooling operation it is determined that actual room temperature Tr is greater than the reference temperature Ts, or (B) for a heating operation it is determined that the actual room temperature Tr is less than the reference temperature Ts; in either case the answer is yes.

As a result of the discrimination at step **S7** if the compressor **113** need not be driven (in case of NO), flow returns to the step **S6**, and executes the operation to detect the room temperature Tr continuously and performs repeatedly the operations subsequent to the step **S6**.

If the result is a need for driving the compressor **113** (in case of YES), flow advances to the step **S8**, where the control means **30** serves to determine an operational frequency of the compressor **113** according to the difference between the room temperature Tr and the reference temperature Ts to thereby cause a control signal for driving the compressor **113** to be generated to the compressor driving means **112**.

Subsequently, the compressor driving means **112** is adapted to drive the compressor **113** according to the operational frequency determined by the control means **104**.

When the compressor **113** is driven, at the step **S9**, the indoor fan **19** is driven and to thereby room air is sucked into the lower cabinet **30**.

Foreign objects floating in the room air sucked through the suction inlet **3** are removed by the filter member **7**, and the filtered room air is heat-exchanged by a latent heat of refrigerant in the heat-exchanger **17**.

The heat-exchanged air is guided upwardly through the duct member **21**, is infused into the inner side of the upper cabinet **40** through the penetration hole **56***a* of the rotation plate **56** and the penetration hole **40***a* of the upper cabinet **40** as describe above. The direction of air sucked into the inner side of the upper cabinet **40** is controlled by the wind direction up and down control member **11** and the wind direction left and right control member **13**.

At step **S10**, the control means **104** discriminates whether the rotation signal producing key provided on the operation manipulating means **102** is "on". If the rotation key signal generated from the rotation signal producing key doesn't input to the control means **104** (in case of NO), flow returns to the step **S9** and the air conditioner performs a normal operation.

As a result of discrimination of the step **S10**, if the rotation key signal generated from the rotation signal producing key inputs to the control means **104** (in case of YES), flow advances to the step **S11**, the control means **104** serves to output a control signal to the upper cabinet **40** for turning it left.

Accordingly, the motor driving means **108** serves to drive the motor **51**, and to thereby turn right the first gear **53** coupled with the motor shaft member **52**, and turn left the second gear **55** geared with the first gear **53**. Therefore, the connection member **54** coupled to the inner side of the second gear **55** turns clockwise.

Then, the rotation plate **56** coupled to the connection member **54** rotates, and the upper cabinet **40** turn to the left.

If the upper cabinet **40** is turned left at the step **S12**, the contact member **64** arranged below the left side of the rotation plate **56** is contacted by the third position detecting sensor **66** arranged on the left side of the lower cabinet **30**, to thereby detect a rotated position to the left.

The control means **104** serves to receive the detected signal generated from the third position detecting sensor **66**, and to thereby discriminate whether or not the upper cabinet **40** is rotated to the left fully.

At a result of discrimination of the step S**12**, if the upper cabinet **40** is not rotated to the left fully (in case of NO), flow returns to the step S**11**, and the control means **104** serves to output a control signal to the motor driving means so that the motor **51** is controllably driven until the upper cabinet **40** is rotated to the left fully.

If the upper cabinet **40** is rotated to the left fully (in case of YES), flow advances to the step S**13**, and the control means **104** serves to output a control signal to the motor driving means **108** so as to rotate to the right, the upper cabinet **40** which has been rotated to the left fully.

Therefore, the motor driving means **108** serves to drive the motor **51** according to the control signal generated from the control means **104** and to thereby rotate the first gear **53** in the opposite direction (to the right).

Furthermore, when the second gear **55** geared into the one side of the first gear **53** is rotated to the left, the connection member **54** coupled with the second gear **55** is rotated to the right.

The rotation plate **56** coupled with the connection member **54** is rotated counter-clockwise and the upper cabinet **40** is rotated counter-clockwise therewith.

If the upper cabinet **40** is rotated to the right at the step S**14**, the contact member **68** arranged below the right side of the rotation plate **56** serves to detect the rotated position to the right by contacting with the fourth position detecting sensor **70**, and the control means discriminates whether or not the upper cabinet **40** is rotated to the right fully.

At a result of discrimination of the step **14** the upper cabinet **40** is not rotated to the right fully (in case of NO), flow returns to the step S **13**, and the control means **104** serves to output a control signal to the motor driving means so that the motor **51** is controllably driven until the upper cabinet **40** is rotated to the right fully.

If the upper cabinet **40** is rotated to the right fully (in case of YES), flow advances to the step S**15**, and where the control means **104** discriminates whether or not the operation key is "off". If the operation key is not "off" (in case of NO), flow returns to the step S**11**, and where the motor **51** is rotated to the right or left repeatedly, and thereby rotating the upper cabinet to the right or left repeatedly, and, at the same time, performing repeatedly the operations subsequent to the step S**11**.

Therefore, the room air sucked into the lower cabinet **30** through the suction inlet **3** according to the operation of the indoor fan **19** passes through the heat-exchanger **17**, where, the room air is heat-exchanged by the latent heat of a refrigerant passing through the heat-exchanger and the heat-exchanged air is guided upwardly by the duct member **21**, and through the hole **54***a* of the connection member **54**, and then through the hole **56***a* and the hole **41**, and infused into the upper cabinet **40**.

As illustrated above, the discharge direction of air from the upper cabinet **40** is controlled by the wind direction up and down control member **11** and the wind direction left and right control member **13**, and, at the same time, the heatex-changed air is discharged in every direction through the discharge outlet **9** according to rotation of the upper cabinet **40** to the right or to the left.

At a result of discrimination of the step S**15**, if the operation key is "off" (in case of YES) flow advances to the step S**16**, and the control means **104** serves to output control signals to the compressor driving means **112** and the fan motor driving means **114** for stopping operation of the compressor **113** and the indoor fan **19** respectively.

Therefore, the compressor driving means **112** serves to stop the compressor **113**, and the fan motor driving means **114** also serves to stop the indoor fan **19** according to the control signals generated from the control means **104**.

Successively, at step S**17**, the control means **104** discriminates whether or not the upper cabinet **40** is fixed to the lower cabinet **30** at a primary position in which the contact member **58** is contacted with the first position detecting sensor **60**.

As a result of discrimination of the step S**17**, if the upper cabinet **40** is not returned to the primary position (in case of NO), motor driving means **108** serves to drive the motor **51** continuously until the upper cabinet **40** is fixed at the primary position and perform operations subsequent to the step S**17**.

If the upper cabinet **40** is returned to the primary position (in case of YES) at step S**17**, flow advances to step S**18**. At step S**18**, the control means **104** serves to output a control signal for rotating the upper cabinet **40** at an angle of 180 degrees to the motor driving means **108** so that the discharge outlet **9** is situated at the rear side of indoor unit **1**.

Therefore, the motor driving means **108** serves to drive the motor **51** according to the control signal generated from the control means **104**, and thereby the first gear **53** coupled with the motor shaft member **52** is rotated clock-wise, and successively, the second gear **55** is rotated counter clock-wise, the connection member **54** coupled with the second gear **55** is rotated counter clock-wise according to the rotation of the second gear **55**.

Furthermore, the rotation plate **56** is rotated according to the rotation of the connection member **54**, and the upper cabinet **40** is rotated at an angle of 180 degrees, and thereby the discharge outlet **9** is situated at the rear side of the indoor unit **1**.

If the upper cabinet **40** is rotated at an angle of 180 degrees, at step S**19**, the contact member **58** comes in contact with the second position detecting sensor **62**. Therefore, the second position detecting sensor **62** detects a rotated position of the upper cabinet **40**, and therefore, the control means **104** discriminates whether or not the upper cabinet **40** is rotated fully at an angle of 180 degrees according to the signal detected by the second position detecting sensor **62**.

As a result of discrimination of the step S**19**, if the upper cabinet **40** is not rotated at an angle of 180 degrees (in case of NO), flow returns to the step S**18**, and the motor driving means **108** serves to drive the motor **51** until the upper cabinet **40** is rotated fully at an angle of 180 degrees.

If the upper cabinet **40** is rotated at an angle of 180 degrees (in case of YES), flow advances to the step S**20**, and the motor driving means **108** serves to stop the motor **51** according to a control signal generated from the control means **104**.

Successively, at step **21**, the control means **104** serves to finish operation of the air conditioner until the operation key is "on", and also serves to order to stand by.

As is apparent from the foregoing, when the air conditioner is driven, the upper cabinet formed with the discharge outlet is rotated to the right and left, and thereby the wind direction control range is broadened, and indoor room becomes pleasant. When the air conditioner is not driven, the

upper cabinet provided with the discharge outlet is rotated by an angle of 180 degrees and thereby the visible exterior of the indoor unit is more attractive and also the mold inside the indoor unit can be eliminated.

Having described specific preferred embodiment of the invention with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention as defined in the appended claims.

What is claimed is:

1. A room air conditioner, comprising:

a housing including a lower portion in which an air inlet is formed, and an upper portion in which an air outlet is formed, the upper portion being rotatable about an axis;

a blower for circulating air through the housing from the inlet to the outlet;

a heat exchanger disposed in the housing for changing the temperature of air circulated therethrough;

a motor for rotating the upper housing portion about the axis;

sensors for detecting a position of the upper Portion relative to the lower portion during rotation of the upper portion;

an input mechanism by which a user inputs rotation signals; and

a controller connected to the input mechanism and the motor for operating the motor in accordance with input signals from the input member, wherein the motor is operable to rotate the upper portion by 180 degrees when a shut-off signal is given.

2. The air conditioner according to claim **1** wherein the upper portion is rotatable about a vertical axis, a conduit extending along the axis between the lower and upper portions for conducting air to the upper portion.

3. The air conditioner according to claim **2** wherein the upper portion is fixed to the conduit, the conduit being rotatable about the axis, the motor connected to the conduit for rotating the conduit.

4. The air conditioner according to claim **3** further comprising a horizontal plate affixed to the conduit, the plate including a hole aligned with the axis, the motor connected to the conduit to rotate the conduit and plate together, the upper portion being fixed upon the plate.

5. The air conditioner according to claim **4** wherein the heat exchanger, blower, and motor are mounted in the lower portion.

6. The air conditioner according to claim **1** wherein the motor is operable to oscillate the upper portion about the axis.

7. The air conditioner according to claim **1** wherein the motor comprises an electric motor and gears driven thereby.

8. The air conditioner according to claim **1**, wherein the motor includes a gear arrangement driven by the motor.

9. A method of controlling an air discharge path of a room air conditioner, the air conditioner comprises a housing having a lower portion in which is formed an air inlet for receiving room air, an upper portion in which there is formed an air outlet for discharging the air back into the room, a heat exchanger disposed in a travel path of the air for changing the air temperature, and a blower for circulating the air through the housing, the method comprising the steps of:

A) manually inputting a rotation signal into a controller;

B) operating the blower and heat exchanger to conduct room air through the housing while changing the temperature thereof; and

C) oscillating the upper portion of the housing relative to the lower portion of the housing about a vertical axis.

10. The method according to claim **9** wherein step C further comprises detecting rotary positions of the upper portion by means of sensors which define limits for an oscillation path of the upper portion.

11. The method according to claim **9**, further including the step of rotating the upper portion by about 180 degrees when the air conditioner is shut off.

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